

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (previously presented): A heater chip for an inkjet printhead, comprising:
 - a substrate;
 - a thermal boundary layer on the substrate;
 - a resistor layer having a resistor thickness and a resistor width on the thermal boundary layer, the resistor width defining a heater width;
 - a conductor layer on the resistor layer defining a heater length; and
 - an overcoat layer having an overcoat thickness on the resistor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein the heater length multiplied by the heater width is in a range from about 50 to less than 250 micrometers squared and the heater thickness is in a range from about 500 to about 6000 angstroms.
2. (previously presented): The heater chip of claim 1, wherein the overcoat layer comprises a passivation layer and a cavitation layer.
3. (previously presented): The heater chip of claim 2, wherein the passivation layer comprises a dielectric layer.
4. (previously presented): The heater chip of claim 1, wherein an energy to emit an ink drop from the heater chip during use is in a range from about 0.007 to about 0.06 microjoules.
5. (previously presented): The heater chip of claim 1, wherein the thermal boundary layer is at least about 1 micron in thickness.

6. (previously presented): An inkjet printhead, comprising:
a housing; and
a heater chip attached to the housing, the heater chip having
a substrate;
a thermal barrier layer on the substrate;
a resistor layer having a resistor thickness and a resistor width on the thermal
barrier layer, the resistor width defining a heater width;
a conductor layer on the resistor layer defining a heater length; and
an overcoat layer having an overcoat thickness on the resistor layer and
the
conductor layer, the overcoat thickness and the resistor thickness defining a
heater thickness wherein the heater length multiplied by the heater width is in
a range from about 50 to less than 250 micrometers squared and the heater
thickness is in a range from about 500 to about 5000 angstroms.
7. (previously presented): The printhead of claim 6, wherein the housing comprises
a supply of ink and the heater chip has an ink via in fluidic access with the supply of
ink.
8. (previously presented): The printhead of claim 6, further comprising a TAB circuit
electrically connected to a bond pad on the heater chip.
9. (previously presented): An inkjet printer, comprising:
at least one printhead having a supply of ink and a heater chip, the heater chip
having
a substrate;
a thermal barrier layer on the substrate;
a resistor layer having a resistor thickness and a resistor width on the
thermal
barrier layer, the resistor width defining a heater width;

a conductor layer on the resistor layer defining a heater length; and
an overcoat layer having an overcoat thickness on the resistor layer and
the conductor layer, the overcoat thickness and the resistor thickness
defining a heater thickness wherein the heater length multiplied by the
heater width is in a range from about 50 to about 350 micrometers
squared and the heater thickness is less than 1100 angstroms; and
a carriage for holding the at least one printhead capable of reciprocating
movement over a print zone during use.

10. (previously presented): The printer of claim 9, wherein the supply of ink is locally
configured within a housing of the printhead.

11. (previously presented): A heater chip for an inkjet printhead, comprising:
a substrate;
a thermal barrier layer on the substrate;
a resistor layer having a resistor thickness and a resistor width on the thermal
barrier layer, the resistor width defining a heater width;
a conductor layer on the resistor layer defining a heater length; and
an overcoat layer, comprised of a passivation layer and a cavitation layer,
having an overcoat thickness on the resistor layer and the conductor layer, the
overcoat thickness and the resistor thickness defining a heater thickness wherein the
heater length, the heater width and the heater thickness define a heater, the heater
length multiplied by the heater width is in a range from about 50 to about 350
micrometers squared and the heater thickness is in a range from about 500 to about
6000 angstroms and the heater is adapted to emit an ink drop with an energy pulse in
a range from about 0.007 to about 0.83 microjoules.

12. (previously presented): The heater chip of claim 11, wherein the passivation
layer is selected from at least one of a silicon nitride, a silicon carbide and a
diamond like carbon layer.

13. (previously presented): The heater chip of claim 11, wherein the conductor layer has an anode and a cathode, a distance between the anode and cathode on a surface of the resistor layer defining the heater length.

14. (previously presented): The heater chip of claim 11, wherein the cavitation layer is a tantalum layer.

15. (previously presented): The heater chip of claim 11, wherein the resistor layer is a layer having at least one of Hf, Ta, Ti, W, HfB₂, Ta₂N, TaAl(N,O), TaAlSi, TaSiC, Ta/TaAl layered resistor, Ti(N,O) and WSi(O) therein.

16. (previously presented): A heater chip for an inkjet printhead, comprising:

a substrate;

an ink via in the substrate adapted to receive a supply of ink from the printhead;

a thermal barrier layer on the substrate;

a resistor layer having a resistor thickness and a resistor width on the thermal barrier layer, the resistor width defining a heater width;

a conductor layer on the resistor layer, the conductor layer having an anode and a cathode with a distance between the anode and the cathode on a surface of the resistor layer defining a heater length; and

an overcoat layer, comprised of a passivation layer and a cavitation layer, having an overcoat thickness and the resistor thickness defining a heater thickness wherein the heater length, the heater width and the heater thickness define a heater, the heater being arranged adjacent the ink via wherein the heater length multiplied by the heater width is in a range from about 50 to about 350 micrometers squared and the heater thickness is in a range from about 500 to about 5000 angstroms, the heater being adapted to emit an ink drop of the supply of ink with an energy pulse applied to the conductor layer in a range from about 0.007 to about 0.69 microjoules.

17. (previously presented): A heater chip for an inkjet printhead, comprising:
a substrate;
a thermal barrier layer on the substrate;
a resistor layer having a resistor thickness and a resistor width on the thermal barrier layer, the resistor width defining a heater width;
a conductor layer on the resistor layer defining a heater length; and
an overcoat layer having an overcoat thickness on the resistor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein the heater length multiplied by the heater width is less than about 400 micrometers squared and the heater thickness is less than about 4000 angstroms and wherein an energy to emit an ink drop from the heater hip during use is less than about 0.64 microjoules.

18. (previously presented): The heater chip of claim 17, wherein the overcoat layer comprises a passivation layer and a cavitation layer.

19. (previously presented): The heater chip of claim 18, wherein the passivation layer comprises a dielectric layer.

20. (previously presented): The heater chip of claim 19, wherein the thermal barrier layer is at least about 1 micron in thickness.

21. (previously presented): A heater chip for an inkjet printhead, comprising:
a substrate;
a thermal barrier layer on the substrate;
a resistor layer having a resistor thickness and a resistor width on the thermal barrier layer, the resistor width defining a heater width;
a conductor layer on the resistor layer defining a heater length; and
an overcoat layer having an overcoat thickness on the resistor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein the heater length multiplied by the heater width is in a range from about 50 to

about 500 micrometers squared and the heater thickness is in a range from about 500 to about 1000 angstroms.

22. (previously presented): A heater chip for an inkjet printhead, comprising:
a substrate;
a thermal barrier layer on the substrate;
a resistor layer having a resistor thickness and a resistor width on the thermal barrier layer, the resistor width defining a heater width;
a conductor layer on the resistor layer defining a heater length; and
an overcoat layer having an overcoat thickness on the resistor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein the heater length multiplied by the heater width is in a range from about 50 to about 350 micrometers squared and the heater thickness is in a range from about 500 to less than about 1000 angstroms.

23. (previously presented): A heater chip for an inkjet printhead, comprising:
a substrate;
a thermal barrier layer on the substrate;
a resistor layer having a resistor thickness and a resistor width on the thermal barrier layer, the resistor width defining a heater width;
a conductor layer on the resistor layer defining a heater length; and
an overcoat layer having an overcoat thickness on the resistor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein the heater length multiplied by the heater width is less than about 400 micrometers squared and the heater thickness is less than 1100 angstroms.

24. (currently amended): A heater chip for an inkjet printhead, comprising:
a substrate;
a thermal barrier layer on the substrate;
a resistor layer having a resistor thickness and a resistor width on the thermal barrier layer, the resistor width defining a heater width;

a conductor layer on the resistor layer defining a heater length; and
an overcoat layer having an overcoat thickness on the resistor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein the heater length multiplied by the heater width is less than ~~about~~ 400 micrometers squared and the heater thickness is in a range from about 500 to about 6000 angstroms.

25. (previously presented): A heater chip for an inkjet printhead, comprising:
a substrate;
a thermal barrier layer on the substrate;
a resistor layer having a resistor thickness and a resistor width on the thermal barrier layer, the resistor width defining a heater width;
a conductor layer on the resistor layer defining a heater length; and
an overcoat layer having an overcoat thickness on the resistor layer, the overcoat thickness and the resistor thickness defining a heater thickness wherein the heater length multiplied by the heater width is in a range from about 50 to about 500 micrometers squared and the heater thickness is in a range from about 500 to less than about 1000 angstroms.